Quality Assurance Project Plan
Lower Passaic River Restoration Project
River Mile 10.9 Characterization

June 2012, Rev. 4

Prepared for:
Cooperating Parties Group
Newark, New Jersey

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AECOM

Quality Assurance Project Plan

River Mile 10.9 Characterization
Lower Passaic River Restoration Project
New Jersey

Lower Passaic River Study Area

River Mile 10.9 Characterization

June 2012

Revision 4

Approved By: Debra L. Simmons
Debra L. Simmons, Project QA Manager

Date: June 25, 2012

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Date: June 25, 2012

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QAPP Worksheet #1 (UFP-QAPP Manual Section 2.1) Title and Approval Page

Document Title: Quality Assurance Project Plan. River Mile 10.9 Characterization. Lower Passaic River Restoration Project.

Lead Organization: Cooperating Parties Group and de maximis, inc.

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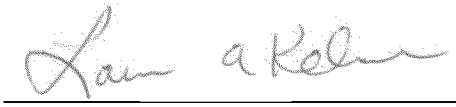
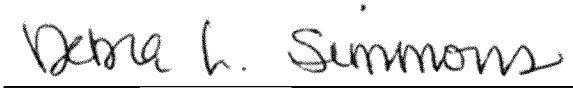
Investigative Organization's Project Manager



Laura Kelmar / AECOM / June 2012

Investigative Organization's Project Quality Assurance (QA) Manager



Debra Simmons / AECOM / June 2012

Lead Organization's Project Manager

Bill Potter / Robert Law / de maximis, inc. / June 2012

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QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels and Analytical Method Evaluation

Matrix: Sediment
Analytical Group: PCDD/PCDFs; Method 1613B; Analytical Perspectives, Wilmington, NC
Concentration Level: Low

Analyte	CAS Number	DQL (mg/kg)[a]	Sediment RL from 2005 QAPP[b]	Project QL Goal (mg/kg)[c, l]	Analytical Method[d]		Achievable Laboratory Limits[e]	
					MDLs (mg/kg)	Method QLs (mg/kg)	EDLs (mg/kg)	QLs (mg/kg)[l]
1,2,3,4,6,7,8-HPCDD	35822-46-9	0.00045[f]	0.0000025	0.0000025	NA	0.0000050	0.00000034	0.0000025
1,2,3,4,6,7,8-HPCDF	67562-39-4	0.00045[f]	0.0000025	0.0000025	NA	0.0000050	0.00000021	0.0000025
1,2,3,4,7,8-HxCDD	39227-28-6	0.000045[g]	0.0000025	0.0000025	NA	0.0000050	0.00000028	0.0000025
1,2,3,4,7,8-HXCDF	70648-26-9	0.000045[g]	0.0000025	0.0000025	NA	0.0000050	0.00000026	0.0000025
1,2,3,4,7,8,9-HPCDF	55673-89-7	0.00045[f]	0.0000025	0.0000025	NA	0.0000050	0.00000030	0.0000025
1,2,3,6,7,8-HxCDD	57653-85-7	0.000045[g]	0.0000025	0.0000025	NA	0.0000050	0.00000029	0.0000025
1,2,3,6,7,8-HXCDF	57117-44-9	0.000045[g]	0.0000025	0.0000025	NA	0.0000050	0.00000025	0.0000025
1,2,3,7,8,9-HxCDD	19408-74-3	0.000045[g]	0.0000025	0.0000025	NA	0.0000050	0.00000032	0.0000025
1,2,3,7,8,9-HXCDF	72918-21-9	0.000045[g]	0.0000025	0.0000025	NA	0.0000050	0.00000031	0.0000025
1,2,3,7,8-PeCDD	40321-76-4	0.0000045[h]	0.0000025	0.0000025	NA	0.0000050	0.00000022	0.0000025
1,2,3,7,8-PECDF	57117-41-6	0.00015[i]	0.0000025	0.0000025	NA	0.0000050	0.00000019	0.0000025
2,3,4,6,7,8-HXCDF	60851-34-5	0.000045[g]	0.0000025	0.0000025	NA	0.0000050	0.00000026	0.0000025
2,3,4,7,8-PECDF	57117-31-4	0.000015[j]	0.0000025	0.0000025	NA	0.0000050	0.00000018	0.0000025
2,3,7,8-TCDD	1746-01-6	0.00000012	0.00000050	0.00000012	NA	0.0000010	**0.00000015**	**0.0000010**
2,3,7,8-TCDF	51207-31-9	0.000045[g]	0.00000050	0.00000050	NA	0.0000010	0.00000012	**0.0000010**
OCDD	3268-87-9	0.015[k]	0.0000050	0.0000050	NA	0.000010	0.00000041	0.0000050
OCDF	39001-02-0	0.015[k]	0.0000050	0.0000050	NA	0.000010	0.00000034	0.0000050
Total TCDD	41903-57-5	NA	NA	0.00000050	NA	NA	NA	0.00000050
Total PeCDD	36088-22-9	NA	NA	0.0000025	NA	NA	NA	0.0000025
Total HxCDD	34465-46-8	NA	NA	0.0000025	NA	NA	NA	0.0000025
Total HpCDD	37871-00-4	NA	NA	0.0000025	NA	NA	NA	0.0000025
Total TCDF	55722-27-5	NA	NA	0.00000050	NA	NA	NA	0.00000050

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QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels and Analytical Method Evaluation

Analyte	CAS Number	DQL (mg/kg)[a]	Sediment RL from 2005 QAPP[b]	Project QL Goal (mg/kg)[c, l]	Analytical Method[d]		Achievable Laboratory Limits[e]	
					MDLs (mg/kg)	Method QLs (mg/kg)	EDLs (mg/kg)	QLs (mg/kg)[l]
Total PeCDF	30402-15-4	NA	NA	0.0000025	NA	NA	NA	0.0000025
Total HxCDF	55684-94-1	NA	NA	0.0000025	NA	NA	NA	0.0000025
Total HpCDF	38998-75-3	NA	NA	0.0000025	NA	NA	NA	0.0000025

Note: Bold indicates chemicals for which the achievable laboratory limits exceed the project QL goal. Refer to Worksheet #37 for details on the data usability assessment with regard to sensitivity.

[a] DQLs based on the lower of : 1) NJDEP, 2008. New Jersey Department of Environmental Protection Soil Remediation Standards (SRSs) for residential soil (http://www.state.nj.us/dep/srp/regs/rs//), 2) USEPA RSLs for residential soil, May 2011, and 3) applicable ecological thresholds based on No observable adverse effects level (NOAELs), Toxicity reference value (TRVs), Apparent effects threshold (AETs), Effects range-low (ER-Ls) and Threshold effects level (TELs). RSLs for non-carcinogenic compounds were divided by a factor of 10 to adjust for a hazard index of 0.1 to account for potential additive effects. DQLs are analytical goals listed solely for the purpose of evaluating laboratory analytical methods and achievable laboratory limits; these are not project-specific screening levels or PRGs and are not approved by the USEPA as the appropriate risk assessment criteria for this project. These values will be developed in subsequent phases of the project.

[b] RLs were taken from Tables 2-1 through 2-21 (MPI QAPP, Lower Passaic River Restoration Project, August 2005).

[c] The project QL goal is selected as the lower of the DQL and the Sediment RL.

[d] Analytical MDLs and QLs are those documented in validated methods. "NA" indicates that MDL and/or QL values were not included in the validated methods.

[e] Achievable EDLs (based on laboratory averaged EDLs) and QLs are limits that an individual laboratory can achieve when performing a specific analytical method. Actual EDLs and QLs will vary based on percent moisture and other sample-specific factors. For PCDD/PCDFs, the EDL and QL are based on extraction of 10 grams/sample. The laboratory reporting detection limit will be based on the sample specific EDL. Matrix interference can increase EDLs by as much as a factor of 10x.

[f] DQL based on RSL for 2,3,7,8-TCDD divided by a TEF of 0.01 (Van den Berg, et al., 2006)

[g] DQL based on RSL for 2,3,7,8-TCDD divided by a TEF of 0.1 (Van den Berg, et al., 2006)

[h] DQL based on RSL for 2,3,7,8-TCDD divided by a TEF of 1 (Van den Berg, et al., 2006)

[i] DQL based on RSL for 2,3,7,8-TCDD divided by a TEF of 0.03 (Van den Berg, et al., 2006)

[j] DQL based on RSL for 2,3,7,8-TCDD divided by a TEF of 0.3 (Van den Berg, et al., 2006)

[k] DQL based on RSL for 2,3,7,8-TCDD divided by a TEF of 0.0003 (Van den Berg, et al., 2006)

[l] The QL for each homolog group is equivalent to the highest QL of any congener in that homolog group.

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QAPP Worksheet #35 (UFP-QAPP Manual Section 5.2.2) Validation (Steps IIa and IIb) Process Table

Step IIa/IIb	Validation Input	Description	Responsible for Validation
IIa	Field SOPs, field records	Verify conformance to approved sampling and field measurement procedures; ensure that activities met performance criteria; and verify that deviations from procedures or criteria were documented.	Debra Simmons, Project QA Manager/AECOM
IIa	Analytical data deliverables, contractual documents	Verify the required deliverables, analyte lists, method holding times, analytical procedures, laboratory qualifiers, measurement criteria, project quantitation limits, and analyses of PE samples conform to specifications. Verify that deviations from procedures or criteria were documented.	Lisa Krowitz, Validation Coordinator/AECOM
IIa	Field records, database output	Verify transcription of field data from field forms to database.	Jim Herberich, Data Management Task Manager/AECOM
IIa	Custody records, analytical data reports	Review traceability from sample collection through reporting.	Lisa Krowitz, Validation Coordinator/AECOM
IIa	Laboratory EDDs, analytical data reports, database output	Verify EDDs against hard-copy analytical reports.	Jim Herberich, Data Management Task Manager/AECOM
IIa	Data validation reports, database output	Verify that entry of qualifiers was correct and complete.	Lisa Krowitz, Validation Coordinator/AECOM
IIb	Analytical data reports	Verify that reported analytes, holding times, analytical procedures, measurement criteria, and project quantitation limits conform to the QAPP. Verify that deviations from procedures or criteria were documented.	Lisa Krowitz, Validation Coordinator/AECOM
IIb	Analytical data reports, validation guidance	One hundred percent of the data will be validated (see details below).	Lisa Krowitz, Validation Coordinator/AECOM
IIb	QAPP, analytical data reports, validation guidance	Verify that the qualifiers applied during validation were in conformance with the QAPP and specified validation guidance.	Lisa Krowitz, Validation Coordinator/AECOM
IIb	Analytical data reports	Verify that PE samples were analyzed at the frequency specified in the QAPP and met the acceptance criteria.	Lisa Krowitz, Validation Coordinator/AECOM

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QAPP Worksheet #35 (UFP-QAPP Manual Section 5.2.2) Validation (Steps IIa and IIb) Process Table

Step IIa/IIb	Validation Input	Description	Responsible for Validation
IIb	QAPP, data validation reports	Verify that data validation was performed in accordance with the QAPP specifications and that all required peer reviews were conducted. If validation actions deviated from the QAPP specifications and/or regional validation guidance based on professional judgment, verify that rationale was documented.	Debra Simmons, Project QA Manager/AECOM

Data Validation

Validation of each analytical group will be limited to the target analytes listed in Worksheet #15 for that group. At a minimum, 100% full validation (includes review of raw data and spot check for verification of calculations) will be conducted for PCDDs/PCDFs (the 2, 3, 7 ,8-substituted Congeners and Homologs listed in Worksheet #15), and all 209 PCB Congeners and Homologs for each sample delivery group (SDG). For all other parameters, 100% full validation (as appropriate to the analyses) will be performed on the first two SDGs. The remaining SDGs will be subject to full validation at a twenty percent frequency and limited validation for the remaining SDGs.

Limited validation will be based on information provided by the laboratory on their QC forms, and will include no or minimal raw data review. At a minimum, limited validation will include the following data elements:

- Agreement of analyses conducted with COC requests
- Holding times and sample preservation
- Initial and continuing calibrations and analytical sequence
- Mass spectrometer tuning (GC/MS only)
- Internal standard performance (GC/MS only)
- Laboratory blanks/equipment blanks/ field blanks/ trip blanks
- Surrogate recoveries
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- Matrix spike/matrix spike duplicate (MS/MSD) results
- Laboratory duplicate results
- Field duplicate results

QAPP Worksheet #35 (UFP-QAPP Manual Section 5.2.2) Validation (Steps IIa and IIb) Process Table

- Interference check sample (ICS) results (AB solution only)
- Inductively Coupled Plasma (ICP) serial dilution results
- Chemical yield (tracers and carriers) (radiochemical only)
- Percent solids
- Quantitation limits and sample results (limited to evaluating dilutions and reanalyses)

If significant issues (e.g., those affecting achievement of the DQOs) are noted during full validation, the limited validation will be expanded to include this issue. Systematic or random errors that would not be detected during a review of the summary forms might include, for example, misidentification or quantitation of compounds, transcription errors, or calculation errors. In addition, limited validation will provide review of key laboratory QC elements, which would highlight potential underlying lab issues which may require further investigation (i.e., full validation effort). If a high frequency of measurement perf ormance issues are found, the issue will be investigated and an additional validation effort may be implemented. AECOM plans to maintain communication/notification systems with the laboratory during the analytical process to circumvent significant QC issues. If QC issues do arise, investigations and corrective actions will be documented and implemented in a timely fashion to optimize the amount of un-qualified data.

In addition, data packages receiving limited validation will receive a completeness check so that full validation could be performed at a later data, if necessary. The check will verify that the raw data for each sample (including all reanalyses and dilutions) are present and complete. The data supporting the sample results, such as QC samples (method blanks, LCS, MS/MSD), calibrations, tunes, and preparation logs, will also be reviewed for overall completeness, however, an in-depth inventory to ensure specific association with all sample data will not be performed.

No additional completeness check will be performed for the geotechnical tests due to limited back-up information provided and the nature of the tests.

Validation qualifiers will be applied based on the criteria in the QAPP, method-specific Region II validation SOPs, or professional judgment. These will be limited to “J”, “UJ”, “K”, and “NJ”, as defined in the Region II validation SOPs.

Reports summarizing data qualification as a result of the validation effort will be prepared.